

FINAL STAFF DRAFT

West Coast Governors' Global Warming Initiative

STATE FLEETS—WORKING GROUP 1

July 26, 2004

I. COMMITMENT STATEMENT

The three States are committed to pursue collective actions that Washington, Oregon, and California state governments can take in the area of state fleets and transportation that will lead to reducing the release of greenhouse gases (“GHG”). We agree that the following actions are first in line to be pursued, but expect that other issues can and will arise and will be considered at an appropriate time.

1. Use the states’ combined purchasing power to reduce GHG emissions by obtaining fuel efficient vehicles and low-rolling resistance tires for motor pool fleets. The intention is to not only improve pricing and other factors for the states’ purchases, but to have a positive impact on the market for efficient vehicles and replacement parts.
2. Seek a change in the implementation of the federal Energy Policy Act of 1992, which currently excludes hybrid vehicles as an allowable mechanism for compliance with the alternative fuels in state fleets requirement.
3. Coordinate emission standards for fleet vehicle specifications.
4. Develop a model “Green Fleet” Policy Statement that describes policies and/or standards that consider best practices for fleets in a comprehensive way.

II. PROBLEM STATEMENT AND OPPORTUNITY

Transportation and the fossil fuel used in the process accounts for 33%¹ of the release of GHGs nationally. In California, transportation accounts for about 50 percent of GHG emissions. In Oregon, it's about 32 percent and, in Washington, it's about 45 percent. The primary strategies for decreasing GHG emissions from the transportation sector include increasing fuel efficiency and decreasing vehicle miles traveled through improved land use planning and development of alternatives to single-occupancy vehicle travel.

Each of the states maintains a substantial fleet of vehicles, numbering about 73,000 for California, 7,400 for Oregon, and 13,000 for Washington. While the operation of state fleets represents a fraction of the overall contribution by the transportation sector, fleets nonetheless represent a potentially pivotal opportunity for leveraging broader change. By assuming a leadership position in modeling best practices, states can leverage other important benefits, such as building market share for new technologies and increasing availability to other consumers.

This working group focused initially on opportunities for combined procurement of hybrid electric vehicles and low rolling resistance tires, but also considered a range of possible other activities in which a collaborative effort might yield significant benefits. These included such options as addressing the

¹ U.S. DOE EIA, “Emissions of Greenhouse Gases in the United States”, 2001

procurement limitations of the federal Energy Policy Act of 1992, establishing a three-state Green Fleet Policy with numerical or percentage emission reduction targets, multi-year vehicle purchase contracts, modifications in procurement specifications to give bonus points to high fuel-efficiency vehicles, and modifications of state contracts with rental car companies to ensure that alternative fuel, fuel efficient and hybrid vehicles are available.

III. BACKGROUND

A. Current Situation for Hybrid Procurement

All three Western States already have contracts in place to enable the procurement of hybrid-type vehicles. To date, California has purchased 283 hybrid-electrics for the state fleet, Oregon 83 and Washington 160. These contracts are established annually at the State level using a centralized competitive bidding environment. The contract itself can be used as a “tool” to allow quick, simple, and cost effective procurements for all state agencies, boards, and departments, as well as all local city and county governments. The contract does not, however, require the purchase of these vehicles; rather it makes these vehicles available if a fleet manager decides to acquire them.

Due to the newer technology and limited production of hybrid vehicles, the cost to purchase one is still relatively high compared to an equivalent sized non-hybrid vehicle. (Example, Honda Civic Hybrid costs approximately \$19,000 vs. Chevrolet Cavalier costing approximately \$11,000) By using the Western states combined purchasing power, the cost of these hybrid vehicles should come down. How much is really unknown.

Currently, the two manufacturers with hybrids available in dealers’ showrooms, Toyota and Honda, are selling the vehicles as fast as they can make them, and still have waiting lists. This suggests that the strategy of getting discounts through making mass purchases by combining the three states’ procurements will be ineffective, as manufacturers would appear to be simply foregoing profit margin on sales that are all but guaranteed to occur. After considering this issue carefully, the Working Group feels that there is value in proceeding with the mass procurement because:

- The supply shortage is expected to be a short-term situation, as manufacturers will undoubtedly work hard to meet the unexpectedly high demand;
- Automobile contracts are on one-year cycles, and efforts initiated now will take some time to be felt in the market; and
- Manufacturers may well be willing to offer a discount to the states in this situation due to the marketing value to them to be included in the high profile of the West Coast Governors’ Global Warming Initiative.

B. Low Rolling Resistance Tires

While rolling resistance has been demonstrated to have a significant effect on fuel economy (anywhere from 1.5 to 6 mpg), replacement tire manufacturers do not routinely provide these data. Additionally, the relationship between rolling resistance and its impact on other characteristics, such as tread wear and traction, has not been thoroughly tested or quantified. The California Energy Commission is in the process of conducting a study that will test a number of tires and provide comprehensive data states can

use to set specifications, although final results are not due until 2005. Until the completion of this study, the states have agreed to request data on rolling resistance from prospective bidders on the replacement tire contract, as a signal that we are interested in the data and also to possibly provide more data for California's study project. Synchronizing this effort with the California study's timeline, we expect to be able to use rolling resistance as a selection criterion for the 2006 tire contract.

C. EPACT

The Energy Policy Act of 1992 ("EPAct") creates challenges for organizations subject to its rules to bring a greater percentage of hybrid-electric vehicles into their fleets. The EPAct was passed to accelerate the use of alternative fuels in the transportation sector by requiring certain public fleets to purchase vehicles capable of running on alternative fuels. All federal and state fleets that own, operate, lease, or control at least 50 light-duty vehicles (8,500 lbs or lighter) in the US and that operate those vehicles within certain metropolitan areas are required to comply. Currently, 75 percent of these light duty fleets must be alternative-fuel capable.

The EPAct requires the purchase of vehicles that are *capable* of using alternative fuels, but does not require that alternative fuel be used in these vehicles. Since most states lack the infrastructure to support the use of alternative fuels (out of 178,000 fuel stations across the nation, only 200 provide alternative fuel), most are complying through the use of "flexible fuel vehicles" or "bi-fuel vehicles," which can be operated by either an alternative fuel or gasoline.

Currently, hybrid electric vehicles do not count as credit towards compliance, even though they can achieve fuel efficiencies nearly twice the current federal Corporate Average Fuel Economy standards and can reduce greenhouse gas emissions from one-third to one-half of those from conventional vehicles. Several organizations and interest groups have been working towards a rule change to allow hybrid-electric vehicles to count towards compliance. Such a rule change would be necessary before hybrids can be introduced in any substantial numbers in the three state fleets.

D. Cleaner Burning Fuels

It should be noted that each of the three states has introduced alternative fueled vehicles into its state fleet to varying degrees. Oregon has over 130 dedicated compressed natural gas ("CNG") vehicles and 175 E-85 (ethanol) flexible-fuel vehicles in the fleet, though these are currently fueled by petroleum. California's Executive Branch fleets currently have 1,994 bi-fuel CNG, 310 dedicated CNG, 15 electric, 1,607 Bi-fuel propane, 1,194 E-85 flexible-fuel vehicles, and 460 methanol flexible-fuel vehicles for a total of 5,580 alternative-fueled vehicles. Washington does not have any significant numbers of dedicated CNG vehicles or other dedicated alternative-fuel vehicles; and, the large percentage of E-85 flexible fuel vehicles in the fleet are fueled exclusively with petroleum.

Biodiesel is of growing interest in each of the three states, and its use is expected to increase significantly as procurement and infrastructure issues are resolved.

The three states are committed to coordinating our activities in this area and sharing information on issues that may arise related to each of these specific fuels and the vehicles that use them.

E. Other Automotive Issues

There are a number of related automotive issues that are well beyond the scope of this collaboration, but deserve attention, particularly in the context of developing a fleet policy document. These issues involve taking a comprehensive, systemic view of the environmental and social impacts of operating large fleets. Examples include recyclability, recycled content, use of lightweight materials, toxic air emissions, reduced or eliminated use of toxic substances, use of re-refined oil, and use of high-efficiency oil filters to extend service intervals.

IV. RECOMMENDATIONS

SHORT TERM (by October 2004).

1. Coordinate purchasing of low rolling resistance tires
 - Jointly develop a statement to be included in replacement tire procurements requesting supplier information about low rolling resistance tires and advising suppliers of the three states' intent to include a low rolling resistance standard in tire specification beginning in 2006.
2. Provide GHG baseline data for each fleet to include annual contribution of GHG emissions from state fleet operations, expressed in metric tons of carbon dioxide equivalent.

LONGER TERM (between October 2004 and October 2005)

1. Set new targets for improvement in performance for fleet and fleet controlled vehicles, including leased and rented vehicles, in terms of average annual fleet GHG emissions expressed in metric tons of carbon dioxide equivalent.
2. Collaborate on the purchase of hybrid vehicles through:
 - Adopting shared life-cycle cost methodology
 - Developing uniform procurement specifications
 - Seek a three-state combined purchasing agreement if there is an economic advantage to doing so.
3. Develop Common Specification for Low Rolling Resistance Tires
 - Jointly develop a common specification for replacement tires that includes a minimum acceptable standard for rolling resistance balanced with other salient characteristics needed to describe acceptable replacement tires adequately.
 - Jointly cooperate in the procurement of tires using an agreed to minimum standard for rolling resistance beginning in 2006.

4. Develop a model “Green Fleet” Policy that identifies comprehensive best practices for fleets. The policy should address:
 - Cost-effective actions to reduce GHG emissions throughout fleet operations.
 - Maintenance practices and other practices that promote higher fuel efficiency operation in vehicles (such as tire inflation).
 - Reducing emission of air toxics.
 - Reducing use of toxic components and enhancing recyclability, and
 - Best management practices for maintenance issues.
 - The Green Fleet Policy should recognize the importance of compatibility of fueling infrastructures and technologies within and between the states and elsewhere in the country to promote market effective commercial outcomes.
5. The three fleets should determine best in class vehicle standards for each type of vehicle needed for light duty fleets (compacts, sedans, pickups, vans). States shall first develop more information about costs and benefits of hybrids. In determining best in class the states shall develop a uniform Life Cycle Cost model with agreed inputs, determine vehicle types and for each type, develop a list of best in class vehicles based on
 - Total life cycle cost for a reasonable agreed to life of the vehicle;
 - EPA air emission scoring or other acceptable criteria to determine air emission standards;
 - Greenhouse Gas Emissions;
 - Fuel Efficiency.
6. Specifications and bid selection criteria should be developed for best in-class vehicles for the various light duty and light trucks that the fleets purchase that include:
 - Life-cycle costing,
 - Emissions credits,
 - Air pollution maximums, and
 - Annual greenhouse gas emission maximums.

7. Seek a grant from an appropriate NGO to conduct a study to identify key leverage points among the three states in fleet operations and recommend actions particularly in alternative fuel implementation and market transformation.
8. Explore Options to Address Limitations of EPOA in pursuing purchase of hybrid vehicles. Options should include:
 - Petition the U.S. Department of Energy for an exemption from the alternative fuels requirement of the Energy Policy Act of 1992 with respect to the purchase of hybrid automobiles.
 - Work with the Governors' Washington, D.C., offices and our Congressional delegations to amend EPOA or adopt a rule change.

V. RESPONSE TO COMMENTS

Several of the comments stressed the benefits of taking a more comprehensive approach to GHG reductions from state fleets, rather than relying primarily on hybrid purchases as our central strategy. Hybrids are only one tool, and should be considered in the context of a range of other options, with the overall goal of reducing GHG emissions. Some urged a deeper cost benefit analysis to determine if increasing the number of hybrids in state fleets was the most effective way to get to the desired goal of reduced GHG emissions. Others pointed out that state fleets represent only a tiny fraction (0.05%) of the total vehicles in the region, and suggested that we look for ways to leverage the recommendations for state fleets, in ways that promote changes in privately owned fleets and in the consumer market.

Working Group I members felt that there was merit in these suggestions and thus have included two major changes to the State Fleet Workgroup Report:

1. Establishing a target for the reduction of GHG emissions from state fleets as part of this project.
2. Broadening the "Green Fleet Policy Statement" (referenced in our draft paper) to include best practices in fleet composition and management, as well as maintenance issues. The goal is that this Policy Statement reflects a set of best practices that would lead to overall GHG reduction. The Policy Statement would serve as guidance to each of the state fleets.

West Coast Governors' Global Warming Initiative

EMISSION REDUCTIONS AT TRUCK STOPS— WORKING GROUP 2

July 26, 2004

Commitment Statement

The three states are committed to reduce emissions from diesel fuel used in transportation by creating a system for reducing emissions at truck stops along the I-5 corridor that stretches from Canada to Mexico. Reducing greenhouse gases (“GHG”) can be achieved by:

- Establishing a core network of facilities along the west coast Interstate 5 (I-5) corridor that will enable truck drivers to rest or “overnight” in their sleeper cabs without idling their truck engines.
- Instituting similar and compatible programs to encourage or require truck operators to use these facilities as they are established.
- Developing additional proposals for later consideration beyond the initial September, 2004, progress date to reduce truck idling GHG emissions.
- Expanding the transportation corridors where such facilities are established and defining additional measures that reduce unnecessary truck idling.
- Developing all measures in a manner that maximizes the reductions of health threatening pollutants, such as diesel particulate matter (“diesel PM”) and smog-forming oxides of nitrogen (“NOx”).

Background

The transportation sector contributes roughly 30 percent of the total U.S. GHG emissions, and heavy-duty trucks account for about 15 percent of the GHG emissions from the transportation sector. Most of the emissions from truck operation occur as the truck is moving freight and commodities, but an estimated five to ten percent of total fuel is consumed when the engine is idling. To the extent that unnecessary idling can be reduced, emissions of GHGs and air pollution can be reduced without detriment to goods movement.

Long distance trucks are often equipped with sleeper cabs that enable drivers to sleep and rest in the truck itself. When the sleeper cabs are in use, heating, cooling and electricity are provided by the truck’s diesel engine. Fuel consumption is estimated to be between 0.8 and 1.2 gallons per hour, or about 10 gallons per overnight use of a sleeper cab, assuming 10 hours of operation. This use of diesel fuel contributes to global warming, and produces substantial amounts of diesel PM and smog-forming NOx, but does not contribute directly to the movement of freight or commodities. In addition, large numbers of trucks often congregate at truck stops or rest areas, and their emissions can produce local areas of relatively high exposure to diesel PM.

There are more than 200 truck stops/plazas and 150 rest stops throughout California, Oregon and Washington. These facilities provide an estimated 16,000 to 20,000 truck parking spaces. According to a June 2002 report to Congress by the Federal Highway

Administration, the demand for truck parking spaces in many parts of the country outstrips the supply. For instance, in California alone, with about 11,000 available spaces, the estimated demand is nearly 20,000 spaces per day during peak hours. Parking overflow usually ends up on public side streets, highway off ramps, and around distribution points.

It is estimated that 90 percent of the truck parking spaces are occupied by out-of-state trucks and 10 percent are in-state based. Based on an unpublished truck stop marketing survey by a leading manufacturer of auxiliary power units, trucks idle for about 90 percent of the time while in parking spaces. Parking spaces are occupied over the entire 24-hour day with the heaviest use during the evening hours. Parking space use averaged about 79 percent, with average ranges of 73 percent to 89 percent, but it can be as high as 100 percent in some locations.

According to a 2000 Argonne National Laboratory study, the average interstate truck equipped with a sleeper cab idles for about 1,800 hours per year. The truck industry spends roughly \$1.6 billion per year on truck driver comfort during resting or sleeping. Emissions from truck idling due to sleepers in California are estimated to be about 0.65 tons per day of PM and 28 tons per day of NO_x. These combined emissions represent about 5 percent of the total PM and NO_x emissions from big rig trucks.

Several thousand long distance trucks travel the I-5 corridor daily. (Caltrans estimates big rig volume at the California -Oregon border to be almost 4,000 per day.) Many of these trucks must stop to allow drivers to rest or sleep during long-distance trips and drivers potentially could use alternatives for powering their sleeper cabs while resting.

One option is to provide the truck with heating or cooling via a flexible duct in a system that also provides electrical and electronic utilities such as cable TV and Internet hookups (for example, the IdleAire technology). The trucker will pay a fee for such service, but in most cases there are net savings due to lower fuel and maintenance costs. About 200 hookups for these systems are now deployed at a small number of truck stops along major truck routes in California, and an estimated 600 hookups are available nationwide. Other options include auxiliary power units (“APUs”) on the truck that are far more fuel efficient than the main engine and sleeper cabs with heating and cooling systems that are independent from the main truck engine and can be plugged into local electrical outlets.

Relative to using the truck engine for auxiliary power, use of alternative systems such as IdleAire or APUs is expected to produce between 75 to 98 percent less GHG emissions. These alternatives result in 90 percent less NO_x; and, diesel PM emissions are reduced by 75 percent with APUs and are virtually eliminated in systems that rely on electrical hookups.

The California Air Resources Board (“CARB”) is considering a regulation limiting unnecessary idling from heavy-duty motor vehicles, including trucks. The regulation would require drivers of diesel-fueled motor vehicles to shut off the engine within a

5-minute limit upon reaching a destination. Shutting off the engine will save both fuel and wear on engines.

The options described above would enable trucks with sleeper cabs to comply with the regulation. Currently both California and Oregon have instituted efforts to provide incentives to install electrification systems that will allow for a comfortable resting environment for drivers in their sleeper cabs.

California has provided up to \$2 million in state air pollution reduction grants to support the deployment and use of IdleAire facilities. IdleAire must construct the facility, but the grant provides a payment to IdleAire of \$1.50 for each hour a sleeper cab uses the hookup rather than idling its engine. Due in part to this grant, six IdleAire facilities are now operating in California and several more are under construction. Of these, two are located at Los Banos and Lost Hills on the I-5 corridor.

In Oregon Governor Ted Kulongoski designated an Oregon Solutions Team to focus on the issue of bringing reduced-idling truck stops to the State. Oregon Solution projects integrate public, private and non-profit resources through a collaborative process to achieve a community outcome. The purpose of this project is to reach agreement on a plan of action for constructing the first reduced-idling truck stops along the I-5 corridor. The Oregon Solutions approach convenes diverse partners in a neutral setting to build agreements and develop a Declaration of Cooperation that outlines implementation strategies. The project will address environmental health concerns and may also identify economic opportunities for the Oregon long haul trucking community, including manufacturers and distributors of trucks, trailers and related equipment.

Recently Oregon State University, through its Kiewit Center for Transportation and Infrastructure, received a grant from EPA to support the construction of truckstop electrification projects along Interstate 5 and other major truck freight corridors in the state. OSU, in cooperation with the Oregon Solutions Team, will oversee a process to identify at least 600 commercial truck parking spaces that will be fitted with idle mitigation technologies. Funding for construction will come from a variety of sources including Oregon's low interest energy loan program, the Business Energy Tax Credit and carbon dioxide offsets from The Climate Trust.

Options Considered

- Pursue a voluntary, informational effort to inform the truck stop operators, truckers and the public of the benefits of reduced-emissions truck stops that provide alternatives to engine idling for sleeper cabs. Publicize progress and promote rapid expansion of the needed facilities.
- Develop a plan to expand the availability/use of alternatives to engine idling for sleeper cabs to encompass the entire I-5 corridor.
- Provide incentives or other support to expand deployment of this technology in each state; for instance, California currently has such a program for a limited time for IdleAire systems.

- Require truck stop operators to implement this technology and require truck operators to use these alternatives where they are available, and
- Institute measures to reduce or eliminate other forms of non-essential engine idling (such as idling during loading or unloading) by heavy-duty vehicles.

Pros and Cons of Each Option

The primary benefit to the public from the reduction of unnecessary idling is a savings in the use of fossil fuel, with a corresponding benefit for GHG emissions and a reduction in airborne emissions of chemicals known to increase the risk of cancer. In addition, reducing diesel PM emissions may reduce the incidents and intensity of asthma.

For the truck operator/owner, reduced idling will result in a corresponding reduction in diesel fuel consumption and maintenance costs. It has been estimated that one hour of idling equals 100 miles of highway travel in terms of maintenance. Assuming 1,800 hours per year of idling, the average truck could be driven 18,000 more miles before the next scheduled maintenance. For the driver, there will be an immediate improvement in the working environment with the reduction of noxious exhaust emissions and the reduction or elimination of engine noise and vibration during rest periods. This could result in better overall sleep conditions and could reduce the risk of driving with fatigue.

The advantage of the independent electrical air conditioning and heating systems is that drivers will be able to use factory-installed equipment to take advantage more effectively of electrical hookups. The cost of trucks equipped with such systems will increase. An advantage of systems such as IdleAire is that there is no up front cost other than a window template. Users are charged on an hourly basis at a price that is less than the cost of using the truck's main engine. However, such systems may not be available at every truck stop location and may include services not needed by the driver.

APUs can service this need, but can cost from \$6,000 up to \$12,000 to install. Preliminary estimates show that this cost can be recouped through fuel and maintenance savings within the first three to four years. However, APUs other than fuel cells do emit both PM and NOx. Currently these emissions are significantly lower than those emitted by the primary engine on an hourly basis, but this may not be true as the cleaner, low emissions engines are phased in beginning in 2007. Truckers may be hesitant to install additional equipment on their vehicles because of cost, space and weight considerations.

For the truck stop operator, providing on-site services for idling reduction represents a financial risk as well as physical infrastructure that require maintenance. The risk can be tolerated if the facilities are regarded as attractive and affordable by the truck drivers and if they either directly or indirectly result in additional revenue. On-site infrastructure must also be durable enough to survive occasional contact collisions with trucks maneuvering in the facility. An effective truck idling mitigation capability at a particular truck stop should generate more visits and increase income. Effective idling reduction options will reduce noise and emission impacts on adjoining neighbors as well as for those using the truck stop.

Regional Approach/Considerations

- Rapid implementation and expansion of facilities will be enhanced through a regional approach and by adopting similar efforts to encourage emission-free truck stops, to provide incentives or require this measure.
- Initiation of this effort along the entire I-5 corridor, the main interstate route used by long distance trucks, makes sense as the logical first priority. However, other high volume corridors should also be considered.

Response to Comments

Comments on the April 13 Discussion draft were received from 19 parties. Many comments generally recognized that there were benefits from truck electrification and that in many cases it could provide energy savings and environmental benefits at relatively low cost or net savings. Some parties were opposed to efforts that would require the installation of expensive equipment or would restrict the ability of truck operators to use existing sleeper cabs powered by existing engines. Major concerns included: costs, the ability to recover investments, the burdens that would be placed on individual truckers, and the fear that restrictions would discourage truckers from staying overnight at truck stops in West Coast States. Other comments included concerns that the impact on GHG emission reduction would be minor and that a detailed assessment of costs and benefits had yet to be presented.

These concerns are valid, and need to be taken into account as measures to reduce idling are implemented. However, it is relatively certain that truck stop electrification and other measures to reduce idling are feasible and can provide significant benefits. The cost appears reasonable and, in many cases, can be recovered within reasonable periods. Therefore the discussion below continues to advocate retention of this element in the West Coast Governors' Global Warming Initiative and recommend efforts to broaden the implementation of these measures.

Fiscal or Legislative Implications

- Initial assessments indicate that this measure should result in benefits for truck stop operators and result in net lifetime savings for truck owners. Therefore, this measure should have both positive economic and environmental benefits.
- Incentives in the form of government grants, tax credits or loans will likely be needed to ensure that capital needs are met for at least the initial projects. Capital costs are significant. For example:
 - It could cost up to \$1 million to install advanced electrification infrastructure at a large commercial truck stop with 100 parking spaces. Projects will need to be seen as self sustaining and profitable to be attractive to private sources of funding for capitalization.
 - APU installation could cost about \$7,000 per vehicle with total costs depending upon the number of vehicles fitted. Payback could occur in fewer than 3 years.

- Providing shore power connectivity at truck stops will cost between \$2,500 to \$4,000 for site improvements and \$2,700 for equipment installation on each truck. Payback to the vehicle owner could occur within 2 to 3 years.
- If incentives are to be provided, it will be necessary to identify funding sources, and it may be necessary to gain legislative authorization from the states.
- If elements are to be mandated, legislative or regulatory agency action in each of the participating states would be needed.

Recommended Actions

Further work among the states to reduce global warming gas emissions and other forms of air pollution resulting from overnight and other unnecessary idling of truck engines is feasible and can be accomplished at net savings or for a reasonable cost. It is recommended that the Governors, as part of their Global Warming Initiative, endorse the following actions:

- Broadly publicizing the efforts now underway in each state that aid in the deployment of electrification technologies at truck stops. Use this information to demonstrate the availability, driver acceptance and benefits of these efforts;
- Direct that within six months a plan be established for the deployment of electrification technologies at willing truck stops in each state on the I-5 corridor, the outskirts of major urban areas and on other major interstate routes. One element of this plan would be a determination of how each state can best provide incentives for the rapid deployment and use of truck stop electrification technologies; and,
- Expand the scope of the current idling reduction effort in the Governors' Initiative to include a more comprehensive program to reduce other forms of non-essential idling by heavy-duty vehicles. Such an effort would explore multiple approaches including driver education, incentives and adoption of regulatory restrictions on unnecessary idling.

West Coast Governors' Global Warming Initiative

EMISSION REDUCTIONS AT MARINE PORTS—WORKING GROUP 2

July 26, 2004

Commitment Statement

The three states and the Province of British Columbia are committed to participating in joint efforts to reduce greenhouse gas (“GHG”) emissions through reductions in the use of diesel engines and other sources of global warming gases on ships and at port facilities on the West Coast. The three states in conjunction with British Columbia and Canadian authorities will work with affected port and shipping entities and other interested parties to realize the benefits from recommended strategies. Recommended activities include:

- Reducing electrical power generated by using onboard diesel engines while marine vessels are docked by substituting power produced by on-shore facilities.
- Promoting additional measures to reduce ship emissions by improving the quality of fuel used by ships when in-port or in-transit along the Pacific Coast.
- Maximizing the reductions of health-threatening pollutants, such as diesel particulate matter (“diesel PM”) and smog-forming oxides of nitrogen (“NOx”), which are significant co-benefits to measures that reduce GHG emissions from ships and on-shore activities related to cargo handling and movement.
- Promoting the pursuit of compatible programs at major West Coast ports.

Background

Ship emissions of toxic diesel PM, smog-forming NOx, and GHGs are significant contributors to pollution problems on the West Coast. Because they consume large amounts of petroleum-based fuels, ships account for roughly two to four percent of global emissions of carbon dioxide (“CO₂”) and roughly five percent of the U.S. emissions from the transportation sector. While in port, ships typically use large diesel engines to generate onboard electricity; and, large ships can use several megawatts of power while docked.

Several Pacific Coast ports employ or are exploring the development of facilities that would allow ships to use power from the on-shore electrical grid while they are docked. Land-based electricity generation along the West Coast results in at least two-thirds lower GHG emissions from CO₂ compared to electrical power provided by onboard diesel engines. In addition, shore-produced power virtually eliminates local NOx and diesel PM emissions when compared to onboard generators. Many other actions to reduce emissions from diesel engines, both on the water and at portside facilities are also underway at West Coast Ports.

In addition to promoting the expansion of port electrification, this effort also involves exploration of a host of other measures to reduce emissions of GHGs, diesel PM, and smog-forming emissions at the ports and along the Pacific Coast shipping corridors. In addition to the core measure of port electrification for ships at dock, other areas to be considered include:

- (1) The use of cleaner, on-road diesel fuels for local vessels (tugs, crew boats, etc.);
- (2) The use of cleaner distillate diesel fuel (instead of bunker residual fuel) in ship auxiliary generators during hotelling operations;
- (3) The creation of a sulfur emission control area under the International Maritime Organization that would require the use of lower sulfur residual fuel oil while ships are in coastal waters;
- (4) The reduction of emissions from the “shore-side” activities at ports related to the loading and unloading of vessels and the movement of cargo to and from the ports, and,
- (5) Programs to lower speeds for ships approaching ports.

In combination these measures could significantly reduce the impact that port operations have on regional air quality and could provide meaningful reductions in the GHG emissions from fuel combustion by ships in the vicinity of West Coast ports.

Options Considered

- Develop technical information and a cooperative framework to define more fully the costs and benefits of port electrification and other fuel related measures.
- Establish a joint technical effort to assure that port electrification and related projects are compatible from port to port.
- Develop a plan to expand the availability/use of port electrification and other measures at West Coast ports.
- Initiate informational efforts to inform the ports, shippers and the public of the benefits, costs and methods for port electrification and related measures.
- Determine how to provide incentives or other support to demonstration projects in each state.
- Encourage port operators to implement port electrification on a small, but growing scale.

Pros and Cons of Each Option

In general, while port electrification will be effective in reducing GHGs from ships berthed at a dock, it will have no effect on ships while at anchor in the harbor. It will also be difficult to warrant installation of shore power connectivity on ships that do not visit West Coast ports regularly. Accordingly, a broader approach that looks at how cleaner fuels or operational changes might concurrently reduce air pollutant and GHG emissions is being pursued.

Coordination among all West Coast ports, including those in British Columbia, will be the key to a successful outcome. Although coordination will be challenging, compared to other maritime shipping areas in North America, the limited number of ports and jurisdictions on the West Coast will make this effort relatively easier.

A collaborative, coordinated approach will require a substantial commitment of staff resources to implement, but will result in a high probability that major issues will be satisfactorily addressed. Financial constraints will be a compelling consideration, but the three states, along with the province of British Columbia, would be in a strong position to compete for funds at the federal level to underwrite demonstration projects. Each state will also be able to bring state-based incentives to support the project. Finally, it is recognized that there will likely be a significant net cost to implement these measures, and that the reduction in GHG emissions, on its own, is unlikely to justify these costs. However, the concurrent reductions in air pollution emissions that could be

achieved are very significant, and they provide much needed pollution reductions that could well justify a switch to cleaner energy sources.

Regional Approach/Considerations

Technically, it is essential the port electrification be done in a coordinated manner at West Coast ports so that ships are capable of using the facilities at each port. Similarly it is very important that efforts to implement other measures that affect ship emissions, fuel specifications and the handling of cargo at the ports be coordinated. Because shippers often have a choice of which West Coast port to use, it is desirable that each port, to the extent that it is in a local where emission reductions are needed or desirable, follow compatible approaches.

Response to Comments

Comments on the April 13 Discussion draft were received from 26 parties. They included, among others, port operators, shipping interests, representatives of broader business interests, environmental groups, and consultants. Comments represented a wide range of views.

The April Discussion Draft presented the concept of port electrification in most detail, and proposed expanding the effort to include 1) the consideration other sources of GHG emissions at ports and 2) impacts of ports and shipping activities on local and regional air pollution.

Among the comments, there was a wide divergence related to the merits of port electrification. Some parties believed it would be highly effective in reducing emissions and should be pursued quickly and extensively. Other commented that it was very expensive, feasible in only limited cases and capable of addressing only a small portion of the GHG emissions associated with shipping and ports.

However, many of those commenting, regardless of their views toward port electrification, indicated that the effort should be broadened to consider a much broader set of measures that might be effective in reducing pollutant emissions from ships and landside port activities. In addition many comments noted that the development of measures to reduce emissions from ships and port activities would be complex, and require the full participation of a wide range of interests, including federal, State, Canadian and local governments, port operators, shippers, fuel suppliers and environmental interests.

The working group continues to believe that port electrification can play an important role in reducing emissions from ships and that implementation of projects to expand its use should be pursued. The group also agrees with the comments that many other measures to reduce pollution emissions should be pursued concurrently and that an ongoing process that involves all stakeholders and interested parties should be used. These concepts are reflected in the recommendations presented below.

Recommended Actions

Further work among the states and British Columbia to reduce global warming and other forms of air pollution from West Coast ports continues to be very important and should continue as a high priority activity for the States. However, the initial focus of the initiative on shore power for ship

electrification to reduce global warming gas emissions should be expanded to consider other opportunities to reduce port related air emissions.

Therefore, it is recommended that the effort be expanded to address other port related activities that produce air emissions that contribute to local and regional air pollution problems as well as to global warming. Further, it is recommended that this effort involve an expanded group of stakeholders, and including a continuing effort among the states, British Columbia, and affected or interested parties.

Finally, ongoing regional coordination on port related pollution is now the subject of a recently formed effort that involves the states, Canadian authorities, port officials, shipping interests and other interested parties. This group was first formed to continue dialog initiated in April, 2004, in Seattle to address port-related pollution issues and solutions. The effort has now become the Marine Vessels and Ports Sector Workgroup and is operating within the West Coast Diesel Emissions Reductions Collaborative. This is a cooperative effort among federal, state and local officials and a wide group of stakeholders to identify cost-effective measures for reducing diesel pollution and identify sources of funding to implement these measures.

In light of the above, the following is recommended to the Governors for consideration:

- That the coordination effort related to port electrification among the states and British Columbia should continue, but can best be accomplished through the full participation of state and Canadian officials in the Marine Vessels and Ports Sector Workgroup within the West Coast Diesel Emissions Reductions Collaborative;
- That air pollution emissions from shipping and port related activities are important due to the potential for local, regional and global impacts, and that officials from each state and Canada should work with stakeholders and interested parties to identify and implement actions that are available to reduce port related emissions; and,
- That state and Canadian officials working on port related issues should continue to participate in the West Coast Governors' Global Warming Initiative process and should provide periodic progress reports to the Initiative. These reports should identify how the efforts to reduce port related air pollution also reduces emissions of gases that result in global warming and should ensure that this progress can be reflected in future reports issued by the West Coast Governors' Global Warming Initiative.

West Coast Governors' Global Warming Initiative

RENEWABLE RESOURCES—WORKING GROUP 3

July 26, 2004

Commitment Statement

The governors of Washington, Oregon and California are committed to accelerating renewable resource development as part of a coordinated, regional effort. Developing renewable energy resources is an appropriate complement to aggressive energy efficiency investment and services. In support of this commitment, a number of specific actions for near-term and ongoing cooperation are identified. Early action is recommended to begin the planning for state purchases of renewable resources, to set objectives that will increase renewable resources supplied by the electric grid, and demonstrate the potential for integration of energy efficiency and renewable resources. It is understood that a significant portion of the new renewable resources in the West will be delivered through the electric grid and utility services.

Background

California, Washington and Oregon use over 10,000 trillion Btus of energy each year (Energy Information Agency 2000) or about 10 percent of the nation's 100 quadrillion Btus annual energy use. Some 6 percent of the region's energy comes from geothermal, biomass, biogas, solar, or wind renewable resources. Hydroelectric resources account for an additional 15 percent of that energy use. In 2002, carbon dioxide emissions produced from electric energy in the three states were about 66 million metric tonnes. In 2000, consumers in the three western states paid over \$91 billion for all energy supplies.

All three states have complementary standards in place for labeling new renewable resources. Electric utility planning in those states is resulting in requests for proposals specifically for renewable resources. California has an accelerated renewable resource portfolio standard, which targets 20 percent of the new supply to be renewable by 2010, maintaining 20 percent through 2017. It also has public purpose charges that are being used to fund renewable resources, net metering, and a tax credit for distributed generation, photovoltaic, and wind energy systems. Oregon has public purpose charges dedicated to renewable resource acquisition throughout 80 percent of the state, net metering statewide, tax credits for businesses or residences, and low interest financing. Washington has net metering and sales tax incentives supporting renewable resource development. Incentives are in place in the region, to varying degrees, that encourage energy efficiency and the continued development of new renewable resources.

Specific Near Term Recommended Actions:

We recommend that the three governors:

1. Establish goals and strategies for state and local governments purchase of renewable energy. Strategies should include, and not be limited to, purchasing biofuels for transportation, choosing green power options provided by utilities, installing renewable resources at publicly owned sites, purchasing tradable certificates, and entering into cooperative buying agreements.

2. Assist the states congressional delegations to extend the Federal Wind Production Tax Credit for no less than ten years and expand it to include biomass, biofuels, geothermal, solar, ocean energy, new hydro, and other renewable resources.
3. Encourage Public Utility Commissions and local suppliers to adopt Western Renewable Energy Generation Information System (“WREGIS”) reporting requirements for renewable resources.

Recommendations for Longer-Term or Broader-Focussed Actions

1. Implement a set of strategies and incentives for Oregon and Washington that will achieve 20 percent of retail energy sales from renewable resources in the western states by 2017. Establish energy efficiency incentive standards in Washington comparable to Oregon and California.
2. Influence the Western Interconnection to place grid expansion investment priority where it supports development of renewable resources.
3. Encourage and assist the states’ Congressional delegation to adopt a national renewable or emissions and efficiency portfolio standard.
4. Develop and promote net-zero or premium efficiency homes with integrated renewable resources. Develop and use tax incentives, loans, education, and technical assistance to leverage private sector investment in new homes with efficiency exceeding codes by 50 percent or more in addition to integration of solar or geothermal space and water heating and photovoltaic electric generation.

Implementation Options Considered

Many actions were considered during this planning that address: 1) coordination of efforts; 2) research and new technology demonstration; 3) workforce development; and 4) legislation or incentives to encourage action, removal of barriers, and region-wide promotion.

Coordination

- Identify and share information on how out-of-state renewable resources can participate in resource portfolio standards. Identify the greenhouse gas emission characteristics of each type of renewable resource and the greenhouse gas implications of various applications and portfolio mixes.
- Work with Bonneville Power Administration to expand transmission capacity between John Day and McNary dams to allow for more bulk power transmission (“wheeling”) flexibility in that region of the grid.
- Develop a set of strategies and incentives that will achieve 20 percent of retail energy sales from renewable resources in the western states by 2017. To do so, encourage the Western Interconnection to place grid expansion investment priority where it supports development of renewable resources, and develop policies on transmission access and pricing that address avoided costs and benefits of renewable resources.

Research and New Technology Demonstration

- Develop coordinated forums or demonstration sites and electronic archives to share information on research and demonstration of new renewable resource

- technologies, policies or practices region-wide. Work with representatives from the national laboratories, Public Interest Energy Research (“PIER”) research in California, Northwest Energy Efficiency Alliance initiatives, state agencies, utilities, and Western State university research teams to select participants and organize the forums.
- Inventory and coordinate the higher education expertise in renewable resource research, assessment, technological design and business services.

Business and Workforce Development

- Share information about the best standards of business practice and promote common permitting, licensing and training standards for the renewable resource industry.
- Provide technical and financial assistance to agricultural producers and processors to increase energy efficiency and shift their energy supply to renewable sources such as bio-fuels, photovoltaic, concentrating solar power, and wind. Possible activities include helping growers and cooperatives with development of rural agricultural fuel crops, processing facilities, siting, market development, and promotion and identification of barley and wheat growing opportunities for ethanol production and support cooperative ethanol production facilities.

Legislation or Incentives to Encourage Action

- States should establish goals or strategies for state and local governments to purchase renewable energy. Strategies should include, and may not be limited to, purchasing bio-fuels for transportation, choosing green power options provided by utilities, installation of renewable resources at publicly owned sites, purchase of tradable certificates, or cooperative buying agreements.
- Support a national renewable portfolio standard in cooperation with the state’s congressional delegations.
- Increase the upper bounds of net metering for non-residential customers to one megawatt and implement the best attributes of net metering laws region-wide.

Regional Renewable Resource Promotion

- Promote and demonstrate models of new homes with efficiency exceeding codes by 50 percent or more, integration of solar or geothermal space and water heating, and photovoltaic electric generation.
- Implement a west coast renewable resource education and promotion campaign that is supported and delivered by the three state governors.

Pros and Cons of Options

Coordination of the three states’ planning, capabilities and common interests may prove to be the most beneficial action. It can provide reduction in duplication of effort, sharing best practices, quicker access to new technologies, better leverage of all three states expressed interests, and consolidation of legislative delegation actions. Developing a set of strategies and incentives that will achieve 20 percent of retail energy sales from renewable resources in the western states by 2017 will be particularly important in this regard. Sharing the evaluation burden or completed analyses for renewables-related transmission needs and impacts between the states can improve the timeliness of

decisions. Absent coordination, information gaps may not allow for timely review in decision making of transmission projects that influence availability, integration, and pricing of transmission for renewable energy to meet electricity demand in the three states.

Research, technology and application demonstrations are being done throughout the region. Sharing that information, coordinating priorities and identifying the expertise to meet new challenges and goals will improve renewable resource acquisition. Developing an effective method for that sharing and planning is essential and will be complex. Setting goals and measures to assure progress in the acceleration of the dissemination of technology and new services will be necessary to determine the effectiveness of this effort. Coordination to reduce duplication of effort and to distribute more broadly a base of knowledge, while minimizing unnecessary research competition, will be complex, if not contentious.

Business and workforce development will improve regional expertise in renewable resources, make the workforce more portable, expand business opportunities, grow employment in smaller more durable businesses, and attract new businesses to the region. Without leadership from the three governors, coordination between states' economic development agencies may not occur due to possible inter-state competition for business growth. Sharing licensing, training and other business or professional standards will reduce transaction costs for businesses moving into the three-state area, but it is likely to take a long time to implement. Thus, benefits may not be realized for some time.

Pursuing efficiency and renewable resources to reduce greenhouse gas ("GHG") emissions is expected to benefit the regional economy. In 2001, a study prepared for economic development and energy agencies from Oregon, Washington and British Columbia showed that the clean energy sector could be twice the size of the aircraft industry within 20 years and generate as many as 30,000 new jobs. Follow-up research focused on a world-class clean "Smart Energy" industry in the Northwest, applying advanced technology to the electric power system. Estimates suggest that the current Smart Energy sector in British Columbia, Oregon and Washington encompasses more than 225 companies with revenues in excess of \$1.9 billion, plus at least another \$150 million in research and development funding, for a total in excess of \$2 billion. The California energy efficiency and renewable resource market is estimated to be more than triple that of the Northwest states and British Columbia.

Developing or supporting legislative initiatives and removing regulatory or other barriers is often state specific. However, there are common regional opportunities that can be pursued. There is a strong and uniform commitment to developing renewable resources in the region. State and local government have an opportunity to lead by example, but local opportunities and constraints vary across the region.

A regional campaign with a consolidated message from all three governors (e.g. demonstration projects of zero-energy homes) would attract significant attention and create market momentum greater than a single message from any individual state.

However, it may be difficult to coordinate among the states, to agree on common goals, to pool resources, and to craft consistent messages because of differing political situations in the states.

Renewable energy can provide benefits related to CO₂ emissions reduction and fuel price stability. California, Oregon, and Washington would need to add about 53,000 GWh/year to achieve a combined total of 20 percent of electricity demand in 2017 from renewable energy. Assuming this energy displaces 100 percent new gas-fired electricity generation at a rate of 0.36 metric tons CO₂ per MWh, 19.1 million metric tons of CO₂ would be avoided in 2017. Assuming this energy displaces a mix of 50 percent new gas and 50 percent new coal at a rate of 0.62 metric tons CO₂ per MWh, 32.9 million metric tons of CO₂ would be avoided in 2017.

Where renewable energy resources displace gas-fired generators, these same resources provide the electricity sector with protection against price volatility. Renewables also have the potential to ameliorate air and water quality problems. At the same time, renewable energy development can have negative social and environmental impacts (e.g., sacred lands, bird kills). These impacts can be avoided or mitigated through site selection and project approval processes.

Regional Approaches/Considerations

Washington, Oregon, and California benefit from regional coordination and exchange of electricity. For example, in 2002 California imported, net of exports, over 27,000 GWh from the Pacific Northwest. California is summer peaking, while Washington and Oregon are winter peaking. In addition, a regional approach to renewable energy could identify potentially complementary load generation characteristics and opportunities. Regarding renewable distributed generation, regional coordination holds potential to reduce administrative/transactions costs (e.g., contractor training/licensing) across the three states.

Political Considerations

This effort should have widespread support from policymakers. However, there will be a need to generate support for the specific actions taken, especially if new funding or mandated participation is included in the effort.

In particular, renewable energy developers and agricultural producers are likely to support these measures. Utilities and ratepayer advocacy groups may resist federal legislation for a national renewables portfolio standard (“RPS”) unless it contains provisions to provide for a competitive least-cost-best-fit process, flexible compliance, and related cost-capping safeguards.

A variety of federal and local funding sources are available to help shift the energy supply of agricultural producers from traditional to renewable energy sources.

It may be problematic to redirect electric ratepayer public goods or public purpose charges to renewable resources that inequitably benefit specific groups of ratepayers or specific renewable resources.

Utilities are likely to be wary of expanded distributed generation unless incentives are put in place to reward them for demand-reducing measures.

Environmental groups are likely to support the measures suggested here, provided that we rely on “best available” practices to minimize bird deaths, and ensure that sustainable forestry practices are followed.

Fiscal or Legislative Implications

The recommended actions include state legislation. Fiscal impact is not clear at this time and will vary from state to state. A modest funding level of \$5 to \$15 million per year, over the next 4 to 8 years, may be required to begin shifting state and local government electricity sources and/or transportation fleets to market-based renewable energy alternatives.

Response to Comments

Over 60 comments were received regarding public communication, inter-state coordination, research, development, and demonstration, new program initiatives and business development aspects of this renewable resource action plan. A range of suggestions included ambitious greenhouse gas reduction goals, coordination of research, allowances for existing hydroelectric, and carbon taxes. Following is a topical summary of comments and committee response. A detailed response to individual comments on the renewable resource action plan is available upon request. In that document, the committee suggests actions in response to many of the comments that can benefit planning efforts, but they did not rise to the level of priority for this multi-state effort now.

Some responders called for significant marketing, education and community-based roadmap planning to improve consumer awareness, develop demand for renewable resources, and to develop support for long-term utility programs. A substantial portion of renewable resources will be delivered to markets through utility services. Developing that availability first requires the legislative, regulatory, and other infrastructural development suggested in this plan. States purchasing renewable resources, leading by example, and local promotions specific to renewable offerings in those areas will best support robust local market development.

Increasing the coordination between the states on federal legislative agendas, Western grid development and policy issues, and having regional continuity in forecasting or valuation of intermittent renewable resources is encouraged by many responders to the draft plan. The WREGIS and legislative actions suggested in this plan do require increased coordination amongst the states. This planning process is ongoing and will serve to identify needs and then drive formation of dynamic ad hoc groups with the

specific expertise to respond appropriately. A more structured coordination process may prove to be counter to the timing and dynamic needs of appropriate response to issues.

Research, development, and demonstration collaboration and information sharing with regards to energy efficiency and renewable resource technologies or practices are encouraged. Using the California PIER, Bonneville Power Administration, national laboratories, U.S. Department of Energy, and national, state, laboratory and university resources to plan complimentary and needs-based development plans can accelerate availability of appropriate technologies.

For example, cellulose to ethanol research and commercialization was encouraged to become a coordinated high priority for the states. This research is underway at Argonne National Laboratory and the National Renewable Energy Laboratory and numerous private laboratories nationwide. Market demand for ethanol is supported by this plans actions and general demand is increasing.

Most research and demonstration is in response to market demands and will respond to needs of developing markets. Focus on the development of the renewable resource markets as, recommended in this plan, will best guide research development and demonstrations. The scale of this type coordination effort can distract limited resources from higher priority actions suggested in this plan.

A significant number of new actions are suggested. Many hold much merit and some are outside the scope of renewable resource development.

- Establishing GHG emissions targets is suggested, and by proxy is addressed in the legislative recommendations in this plan.
- Accounting for carbon-risk and establishing GHG credits and offset trading systems is also of interest.
- Receiving renewable resource credit for existing large hydro is suggested and will be addressed by the WREGIS action item.
- Expanded co-generation, integrating national forest health plans to accelerate biomass to energy projects and encouraging increased domestic use of wood thermal energy are encouraged in comments.
- Combined heat and power facilities using either fossil or renewable fuels are an energy efficient approach which hold significant promise.
- Providing incentives for any renewable resource through production credits and enabling transmission for those projects, as suggested as priorities in this plan, is essential to their development.
- Significant national effort is underway to implement forest stewardship agreements to optimize the use of forest products to the best benefit of forest health. No duplication of that effort is indicated.

West Coast Governors' Global Warming Initiative

CODES AND STANDARDS—WORKING GROUP 4

July 26, 2004

Commitment Statement

The Governors of Washington, Oregon and California are committing to reduce greenhouse gas emissions by improving appliance and building code energy efficiency standards both nationally and within our states.

Specific Near-Term Recommendations

We recommend the following.

1. The three Governors acknowledge the ongoing west coast efforts to defend the states' authority to adopt energy efficiency standards for products not covered by the federal government and oppose the federal government's attempts to add products to its list of federally regulated standards prematurely.
2. The three Governors instruct their agency directors to secure investments from energy efficiency or general state funds to support the continued development and implementation of building energy codes and appliance efficiency standards.
3. The three Governors strongly support the adoption of energy efficiency standards for eight to fourteen products, not regulated by the federal government, thereby establishing a cost-effective efficiency threshold that all products sold on the West Coast must achieve.
4. The three Governors strongly support continued efforts to defend the rights of states to require manufacturers to certify the performance of federally covered products to the state.

Recommendations for Longer-Term Actions

We recommend the three Governors indicate their commitments now to the following ongoing and longer-term efforts.

1. Direct agencies to work through the political and technical rulemaking processes to achieve five to ten percent savings during each three-year code cycle in the construction of new buildings through energy efficiency improvements to state building energy codes.
2. Direct state agency staff to intervene in and inspire the federal rulemaking process to capture all cost-effective upgrades to federal energy efficiency standards for all federally regulated products.

Background

Minimum standards are the least-cost way for states to insure cost-effective improvement of the energy efficiency of buildings and the equipment and appliances used in buildings. All three states have a long history of being leaders in the implementation of building energy efficiency standards and have encouraged the adoption of appliance efficiency standards. It is important to recognize that codes and standards are part of a continuum of market transformation initiatives to achieve increasing levels of energy efficiency.

In addition to codes and standards, this continuum includes research and development (R&D) and market incentives. The introduction of a new energy efficiency technology or practice can be viewed as a life-cycle: R&D at the outset develops the technology; market incentives advance the market availability, demonstrate the benefits, and reduce barriers to the use of the technology; and, finally, inclusion of the technology in codes and standards mainstreams the technology and locks-in the energy savings.

In this context codes and standards, the societal least-cost means of accomplishing energy efficiency, can be viewed as an exit strategy for market incentives programs, resulting in a discontinuation of expensive incentives support when the technology has been demonstrated as ready for inclusion in codes and standards. It is critically important for each of the elements of this continuum to be pursued and coordinated continuously. Public funding for energy efficiency should recognize the importance of all of these elements of the continuum and systematically invest in each element.

We power our businesses and households in the west coast states with fossil fuels and electricity. Our electricity is generated primarily with natural gas, coal, hydropower, and oil. Every improvement to building or equipment energy efficiency standards means a reduction in burning fossil fuels and CO₂ savings. For example, in 2002 Washington State improved the minimum window efficiency in the energy code for natural gas heated homes. Over the next 15 years this modification alone will have cumulatively averted 1.5 million metric tons of CO₂. The potential energy savings and greenhouse gas reductions from this part of the West Coast Governors' Global Warming Initiative are large.

Building energy codes impact the energy use of new buildings and alterations to existing buildings, including the energy-using equipment installed in them. Appliance efficiency standards impact the energy use of all appliances/equipment that are sold whether or not they are permanently installed in buildings and subject to the building code.

Builders and manufacturers of equipment make decisions about incorporating energy efficiency measures, but they do not pay the energy bills. They have little reason to invest in efficiency upgrades for which their customers receive the returns. This is a classic market failure that codes and standards are ideally suited to address.

Codes and standards also have other advantages:

- They drive down the market cost of energy efficiency improvements by building energy efficiency into the base model. Economies of scale cause energy efficiency improvements to be provided at dramatically lower cost than when the market only supplies the energy efficiency in premium models.
- Energy efficiency is least costly when built into the building or product at the outset. Trying to achieve the same efficiency later through retrofit is almost always much more expensive, if not impossible, which is why the missing efficiency improvements during construction are called, “lost opportunities.” Inefficiency is a particular burden on society for buildings and products that have long lives.

- Energy efficiency delivered through codes and standards is substantially less expensive than the cost of building an equivalent amount of new generation.

It should be noted that the savings from codes and standards would likely be greater if the economic consequences of global climate change were explicitly considered in cost effectiveness tests. This suggests a possible additional, longer term action item – that of adopting analyses such as the Northwest Power and Conservation Council’s that raises the maximum cost-effectiveness standard due to the financial value of energy efficiency as a hedge against fuel price volatility and/or including CO₂ mitigation costs into the analysis of cost effectiveness for energy codes, standards, and efficiency programs.

Federal Appliance Standards and National Consensus Building Energy Codes

Federal law requires the U.S. Department of Energy (U.S. DOE) to establish federal appliance efficiency standards for specific appliances and equipment (referred to as "covered" products). It is strongly in the interests of the states that the federal standards are as effective as possible. However, many types of appliances and equipment are outside the scope of the federal standards, and adoption of standards for these "non-covered" products are within the authority of the states. U.S. DOE is now proposing to expand the list of products in the "covered" category, but without implementing standards for these products at the same time. In fact, it could be a decade or more before such standards might come into effect. The three states have had substantial experience and ongoing interest in advocating that federal standards maximize the benefit to the states and more than ever that states' rights for implementation of standards and adoption of standards for non-covered appliances are maintained.

Federal law also requires that states adopt building energy codes and benchmark those codes to national consensus standards.¹ The three states are among the leading states in the U.S. for having exemplary state energy codes that exceed these national standards. All three states have well-established building energy codes processes that consider upgrades every three years.

Status of State Appliance Efficiency Standards and Building Energy Codes

California has recently completed two updates to its Building Energy Efficiency Standards in response to legislation to address the California electricity crisis. Emergency standards were adopted in 2001 and additional standards were adopted in November 2003. California is also planning for the next update in 2007. California's standards are kept substantially more stringent than national consensus standards.

The California legislature in 1975 mandated that the California Energy Commission adopt appliance efficiency standards by regulation, and the Energy Commission has maintained a vigorous appliance standards program since. This is primarily aimed at appliances that are "not covered" by federal appliance standards. In 2002, the Energy

¹ States are required to adopt energy codes for nonresidential buildings that meet or exceed the American Society of Heating, Refrigerating and Air Conditioning Engineers Standard 90.1 and to compare their energy codes for residential buildings to determine if they meet or exceed the International Energy Conservation Code.

Commission adopted standards for 10 appliance types. In 2004, the Commission is planning a proceeding to adopt standards for about 20 additional appliances types.

The Energy Commission also recently adopted standards for residential and commercial air conditioners and for the water consumption of residential clothes washers, which are covered products. For the Commission to be able to implement these standards, a waiver from federal pre-emption will have to be approved by the U.S. Department of Energy. California also has an extensive database that has been maintained over the past 25 years of manufacturer certified efficiency ratings for both covered and non-covered appliances and equipment.

Recently, manufacturer trade associations challenged in federal court the Commission's authority to require certification of covered products. The Commission is defending a state's rights to require such information. At this point the requirement for certification of covered products is enjoined as the case is being tried. The Commission continues to maintain its certification program and database for non-covered appliances. The outcome of this case will be even more important if U.S. DOE succeeds in expanding the list of covered products without implementing standards for the added products.

Oregon's building energy code process is in the first year of its normal 3-year cycle. The most recent upgrade of the residential code went into effect in April 2003, with a limited, but important, set of improvements to the 1992 code. The commercial energy code upgrade, a major one, went into effect in October 2003. The stringency of both codes is now comfortably beyond that of national standards. Oregon has no recent history of establishing appliance and equipment standards outside of the building energy codes. It currently has no efficiency certification and compliance-monitoring infrastructure for implementing such standards.

The Washington State Building Code Council conducts a public process to review and adopt code modifications. The adopted package of amendments is presented to the legislature. If the legislature does not reject the code amendments, they are codified. In early 2002, the residential energy code upgrade was approved. Principal energy savings were in homes heated with natural gas, propane and heat pumps. In November 2003, an upgrade package for commercial buildings failed to garner approval by the Building Code Council. Washington currently has no appliance and equipment standards outside of building energy codes, nor is there any established efficiency certification and compliance-monitoring infrastructure.

Implementation Options

The following implementation options are available:

- a) Several state legislatures around the country are currently considering enactment of specific appliance efficiency standards for non-covered products. Oregon and Washington also could enact such legislation. Such standards should anticipate the need to have manufacturers certify efficiency and for the maintenance of a database of certified products. It's possible that Washington and Oregon could

make use of California's database for this purpose. Appliance standards adoption should anticipate a need for effort on the part of the state to insure good compliance with the Standards.

- b) The building energy codes in all three states have the potential for further economically beneficial upgrades, including both efficiency standards for appliances that are installed in buildings, and building design and construction standards. This would not require further legislative action.
- c) All three states should continue to support federal appliance efficiency standards that are of maximum benefit to the states and region.

Issues Affecting These Options (Pros and Cons)

Pros:

1. Improved standards would both reduce CO₂ emissions and keep more money circulating in the west coast economies.
2. There are still some very significant savings to be had from codes and standards upgrades.
3. There are many data already available to use in evaluating a wide range of new product standards from the CEC, the Northwest Power and Conservation Council, and nationally from ACEEE. In California, substantial public goods charge funding administered by the utilities (in particular Pacific Gas and Electric Company) has been devoted to development and justification of appliance energy efficiency standards. The data from this effort are directly applicable for use by Oregon and Washington in establishing similar standards; and, California sponsors of this work could provide technical assistance for that purpose.
4. California has a long history of rulemaking in this area, with many recent successes. The Energy Commission also maintains a product efficiency certification process and publicly available database and monitors compliance with standards.
5. Recent standards implemented by Maryland (overriding the governor's veto) and Connecticut and proposed in as many as eight other states are important energy and environmental efforts. The willingness of so many states to become active on standards is probably also a response to the unfortunate absence of visible progress on appliance efficiency standards at the federal level.
6. All three West Coast states, and many others around the country, agree on the opportunities for standards for specific products.

Cons:

1. Each state is at the beginning of a new building code update cycle now. The earliest upgrades through building energy codes will not be implemented until 2006, absent the executive or legislative imposition of a shortened time line.
2. Appliance standards impacting products outside the scope of building energy codes in Oregon and Washington would require enabling legislation authorizing adoption by regulation or standards would have to be enacted legislatively. And, the legislation would have to provide a mechanism for product efficiency certification (possibly by

relying on California's certification program and database) and for compliance monitoring. This would represent a policy change of some significance.

Political Considerations

The process in each state has its own challenges; and, well-justified, cost-effective code changes have failed implementation in the past. There are many stakeholders wedded firmly to the status quo. Opposition to codes and standards, or upgrades thereto, generally come from the following: 1) those who profit by selling low efficiency appliances, without the need for significant additional capital investment (they risk losing market share); and, 2) builders and developers who object to increased costs of construction without regard to the financial savings for the building owner. Large manufacturers of appliances that wish to produce to a national market without consideration of the special needs of the western states may be the most vocal opposition.

Support for effective appliance efficiency standards and building energy codes comes from administrators of the regional electricity system, some utilities, water agencies, the environmental community, providers of energy efficiency products and services, and that portion of the building community that recognizes the importance of providing a sustainable, affordable and comfortable product and avoiding construction defect liability.

The states must maintain or build support from those organizations and energy utilities that manage ratepayer efficiency funds. Codes and standards need to be recognized as the critical final market transformation phase in a continuum of coordinated publicly funded initiatives to achieving ever-increasing levels of energy efficiency. The success in California of applying public surcharge funding to codes and standards development (as part of an integrated continuum of coordinated energy efficiency initiatives) should be pursued by Oregon and Washington.

Fiscal Implications

California and Oregon would encounter little incremental cost associated with this set of actions, except for the data collection activities and the tracking of data for additional types of products (for which there is no standard at present). Washington State would need to have energy policy staff more strategically involved in the building energy code process and if state product standards were adopted, the State would invest some level of effort in enforcing the new standards.

Detailed Recommended Actions

These detailed actions complement and expand the near-term and long-term specific recommendations at the beginning of this report.

- A. Incorporate upgraded energy efficiency standards for building components within the next building code cycle.
 - 1. The Washington Building Code Council should reconsider the code package that failed in November 2003, as the Governor has requested.

- B. Incorporate upgraded or new efficiency standards for appliances and equipment that are subject to a building permit within the next building code update cycle.
1. California, Washington, and Oregon shall identify improvements to each states building energy codes to be pursued for the 2007 update.
 2. To support longer-term goals, the states should be sharing data and analyses now to support one another's efforts to capture efficiency improvements in products and building technologies during each three-year code process.
 3. The states will seek to implement improvements in building energy codes that capture the maximum feasible energy savings that have been shown to be cost-effective and demonstrated to be practical and effective through voluntary, publicly-funded energy efficiency programs.
- C. Adopt selected appliance energy efficiency standards for products not covered by the federal government.
1. California should continue to pursue adoption of new appliance standards in 2004.
 2. California should provide information and technical assistance to Oregon and Washington in their efforts to adopt and implement similar standards for appliances and equipment.
 3. Washington should draft legislation for the 2005 session that identifies energy efficiency standards for 9 to 15 products.
 4. Defend the states' authority to adopt standards for "non-covered" products. Each state has submitted comments to U.S. DOE urging it 1) to focus its efforts on improving the efficiency levels for products currently covered by federal standards, and 2) not to deem additional products as "covered" many years in advance of when they could possibly put standards for such products into effect.
- D. Adopt appliance energy efficiency standards for federally "covered" products where such federal standards fail to capture all clearly cost-effective savings.
1. California should complete and file petitions for waiver from pre-emption for California residential and commercial air conditioner and residential clothes washer (water factor) standards.
 2. Collectively, the west coast states should continue to defend the rights of California (or any state) to require manufacturers to certify efficiency of federally covered products to the state.
- E. Improve federal appliance standards.

California and Oregon should take the lead on working within the federal rulemaking process to improve appliance efficiency standards for products covered by the federal government. These states will identify for Washington staff critical opportunities for intervening in the federal process.

- F. Pursue codes and standards as part of an integrated public energy efficiency strategy.

Investigate expanded application of the concept of codes and standards as the critical final market transformation phase of a continuum of coordinated publicly-funded initiatives (including research and development and market incentives) to achieve increasing levels of energy efficiency with the expectation that each element is important and should be properly funded.

- G. Encourage High Performance Buildings.

1. Investigate ways to insure that the structures and tools used to implement energy codes and standards are coordinated with efforts to develop high performance buildings and break-through improvements in building energy efficiency.
2. States collaborate to identify barriers to constructing high performance buildings, in existing and proposed code language.

- H. Ensure Improved Construction Quality, Building Commissioning and Building Operations.

Investigate codes and standards approaches to ensure quality installation of energy efficiency measures, building commissioning, and fault detection and control hardware that would identify and diagnose equipment failures.

- I. Pursue Public Funding to Support Better Code Enforcement and Training for Code Compliance.

Train the entire industry that needs to be able to understand and carryout the requirements of standards. Training and providing technical assistance to building departments responsible for enforcement is a inherent element of effective standards. Innovative approaches should be pursued to accomplish this training, such as using video and interactive media, and involving stakeholders who benefit from the energy savings of successful standards implementation in sponsorship of the training.

Benefits

The recommended actions will result in substantial energy, environmental, economic and other benefits. As a result of saving considerable natural gas energy and electricity, the recommended actions will result in avoidance of fossil fuel consumption (natural gas at the building site and natural gas and coal at electricity generation stations) and of the resultant emissions due to the energy savings, including criteria pollutants and greenhouse gas emissions. Table 1 provides an example of first year energy savings and CO₂ reductions from upgrading the building energy code or adopting state product efficiency standards in Washington.

Table 1 Example of Energy Savings and CO₂ Savings of Recommended Actions

<i>Type of Standards/Code</i>	<i>Energy Savings 1st year</i>	<i>CO₂ Savings 1st year</i>
<i>WA State Building Energy Code 2004</i>	1.4 aMW; 14 BBTUs	6,275 (mt)
<i>WA State Standards for non-covered products</i>	17 aMW; 333 BBTUs	84,000 (mt)

In addition, the recommended actions will result in other benefits, along with reducing greenhouse gases, for different stakeholders as shown in Table 2.

Table 2. Summary of Standards Co-Benefits to Stakeholders

Stakeholder	Benefits
1. Builders and Construction Contractors	<ul style="list-style-type: none"> a. Increased Customer Satisfaction b. Reduced Callbacks c. Reduced Liability and Litigation for Construction Defects d. Increased Marketability of Buildings
2. Business Building Owners and Homeowners	<ul style="list-style-type: none"> a. Reduced Energy Bills in excess of increased mortgage cost b. Reduced Operating Cost – Increased Affordability c. Increased Profit d. Increased Comfort and Worker Productivity e. Increased Property Value f. Reduced Need for Builder Callbacks and Litigation for Construction Defects g. Reduced Exposure to Future High Energy Bills or Electricity System Disruptions
3. Energy Services Providers (Architects, Engineers, Energy Consultants, Third Party Verifiers, etc.)	<ul style="list-style-type: none"> a. Increased Market Value of Services b. Increased Business Volume c. Increased Profit d. More Jobs e. Increased Competitiveness
4. Energy Product Manufacturers	<ul style="list-style-type: none"> a. Increased Market Value of Products b. Increased Business c. Increased Profit d. Increased Jobs e. Increased Competitiveness
5. Utilities	<ul style="list-style-type: none"> a. Demand Reductions at costs considerably lower than the cost of new generation, transmission and distribution resources b. Increased Electricity System Reliability c. Eliminated Need to fund energy efficiency rebates for measures that are in Standards
6. Energy Ratepayers	<ul style="list-style-type: none"> a. Reduced energy bills resulting from utility cost reductions spread to all ratepayers.

Studies have shown that energy efficiency improvements in buildings improve occupant comfort, increase worker productivity, and increase property value. The value of increased worker productivity can be an order of magnitude greater than the energy bill savings. Energy bill savings in combination with increased property value result in a

very high return on investment. Focused attention on proper installation of energy efficiency measures (such as through third party verification) has substantial benefits to builders, including improved customer satisfaction, reduced callbacks, and reduced exposure to liability and litigation due to construction defects. Investments in energy efficiency will help building owners avoid potential future energy bill price shocks and electricity system disruptions.

Response to External Stakeholder Comments

The most significant change made in the codes and standards report based on comments received from multiple parties was to recognize explicitly that codes and standards should be viewed as a critical final market transformation phase in the continuum of publicly-funded energy efficiency initiatives. The initial phases of these initiatives include:

- Investing in energy efficiency research, development and demonstration;
- Implementing programs that bring energy efficient products and services to market; and,
- Laying the foundation of market acceptance so that manufacturers and their products are more ready for the adoption of energy efficiency specifications into codes and standards.

The report now recommends that the states encourage and support public (utility ratepayer) investments for energy efficiency programs, including support for improvements to and implementation of codes and standards. Thus, the states have identified the pursuit of codes and standards as part of an integrated energy efficiency strategy.

Several stakeholders asked the states to support the development of codes that encourage high performance buildings or zero-energy homes. This has been included as a recommended action.

Two comments were received from Washington stakeholders who believe that more energy efficiency in residential structures results in more mold problems. Energy efficiency advocates have done much to research this issue, and this work continues. However, there is no evidence that energy efficiency measures are responsible for the limited number of homes where mold and mildew have been a problem. Rather, there is a growing body of work, such as that listed below, that implicates other causes of building moisture problems.

1. In 1998, the City of Seattle conducted a survey of 92 contemporary apartment buildings requiring moisture damage mitigation. The overwhelming results were that the moisture problems were caused by leaks from the exterior. Primarily leaks where windows and decks interface with the walls.
2. In 2001, Achilles Karagiozis of Oak Ridge National Laboratory conducted a Seattle wall moisture study. This study modeled the heat and moisture transport of 36 different construction methods. It concluded that increasing the insulation from R-11 to R-30 had very little impact on the moisture performance of wall

systems. In addition, the study confirmed that the state requirements for vapor retarders, and mechanical ventilation are appropriate for our climate.

3. Washington State University in collaboration with the wood products industry has recently constructed a facility in Puyallup to specifically study heat transfer and moisture problems in buildings. Preliminary results show that walls built to the current state energy code have less moisture accumulation than a wall representing construction from the early 1980's. In addition, the results show that test walls that represent methods that can be used to increase efficiency while reducing the risk of wall moisture problems have proven effective.

West Coast Governors' Global Warming Initiative

INVENTORIES/PROTOCOLS/SCIENTIFIC RESEARCH—WORKING GROUP 5

July 26, 2004

Commitment Statement

The three states are committed to developing consistent and coordinated state greenhouse gas emission inventories, protocols for standard reporting for state inventories, and accounting methods for greenhouse gas emissions; to collaborating on improved scientific tools to better estimate the impacts of climate change; and to identifying the information that regional policy makers need regarding climate change adaptation and mitigation.

The working group addressed specific state-level inventory and accounting issues, such as how to characterize the carbon content of the electricity mix; how to account for materials use and recycling; how to account for transportation fuels, including alternative fuels, ethanol blends, bunker fuels, and aviation fuels; what inventory and forecasting tools to use; how to account for sequestration of carbon, including biomass; and, other special accounting issues. The working group also identified the need for a West Coast conference on scientific research that could help address state and regional policy development.

Background

In 1988, the governing bodies of the World Meteorological Organization and the United Nations Environment Programme created the Intergovernmental Panel on Climate Change (“IPCC”) to marshal and assess scientific information on the subject. In 1990, the United Nations General Assembly established the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change. Its government representatives adopted the United Nations Framework Convention on Climate Change (“UNFCCC”) in 1992. It entered into force in 1994.

The UNFCCC has been joined by 188 states, including the United States, and the European Community. This almost worldwide membership makes the Convention one of the most universally supported of all international environmental agreements.

The ultimate objective of the Convention is “to achieve stabilization of atmospheric concentrations of greenhouse gases at levels that would prevent dangerous anthropogenic (human-induced) interference with the climate system. In 2001, the U.N. Intergovernmental Panel on Climate Change (“IPCC”) reported in its *Third Assessment Report* that “There is new and stronger evidence that most of the global warming observed over the last 50 years is attributed to human activities.”

In 1997, the UNFCCC adopted the Kyoto Protocol to meet specific greenhouse gas emission goals. The United States has refused to join the Protocol; and, it has not gone into effect because it has not met the required participation thresholds.

In the meantime, many states and local governments in the United States have completed greenhouse gas inventories and have prepared strategies and measures to reduce greenhouse gas emissions. The states have accepted technical guidance and assistance from the federal government, but they have also acted on their own assessments of the need to address climate change and have adopted their own policies.

Accounting. This working group focuses mainly on the technical issues related to state-level inventories. Greenhouse gas emission inventories that are being developed by the states of Washington, Oregon and California use guidelines prepared by the U.S. Environmental Protection Agency. The guidelines are adapted from the IPCC guidance for conducting national inventories under the UNFCCC. In each state inventory, greenhouse gases include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Although the first three gases are also emitted from natural sources, the inventories include only emissions due to human activities.

Each state has prepared greenhouse gas inventories and strategies in the past. The experience of those past efforts informed the list of issues that the region needed to resolve. Nonetheless, development of protocols to record emissions and to measure or forecast reductions of greenhouse gas emissions vary by state as each updates its state inventory.

- California has developed a general reporting protocol for a voluntary reporting system. Forty entities have participated and reporting has only begun for a few members.
- Oregon requires new energy facilities to offset part of their carbon dioxide emissions and it has adopted general guidelines for evaluating offset projects that energy facility developers propose for meeting the standard. However, so far all new energy facilities have provided funds to an independent organization, The Climate Trust, to obtain offsets rather than provide offset projects themselves. Therefore, the Oregon guidelines for developers who submit their own projects for Energy Facility Siting Council evaluation as part of a site certificate application remain untested. On the other hand, The Climate Trust has extensive experience in obtaining offsets.
- Washington has adopted a carbon dioxide mitigation standard for new energy facilities. It has recently published its greenhouse gas inventory. In 2000 the state established Fuel Mix Disclosure requirements for electric utilities to help assess fuel use at a utility level and the greenhouse gas contribution from this sector. The Puget Sound Clean Air Agency, in conjunction with the Tellus Institute, is developing a detailed greenhouse gas inventory that will attempt to incorporate materials use and recycling.

As the states prepare new state strategies and cooperate on regional efforts, there is a continuing need to ensure that the technical basis for policy decisions is consistent among the states or that the states have identified where they depart from consistent practices.

This working group will continue to provide the forum for the interstate coordination among staff.

Working Group 5 focused primarily on state inventories. The purpose of a state inventory is to provide background for policy-makers. Likewise, estimates of options to reduce greenhouse gas emissions provide guidance about which policies and measures a state might pursue. The estimates of reductions are for programs, not individual projects. Furthermore, states need a methodology that they can update regularly without extensive data gathering.

For all these reasons, the baselines of emissions and forecast of potential offsets should be based on state-level data or regional estimates of average values. On the other hand, detailed analysis is needed to quantify greenhouse gas emission offsets for trading purposes, to calculate offsets offered to meet a regulatory requirement, or measure emissions for registry accounting. Therefore, the conventions that may be adequate for broad policy-making are not meant as guidance for calculations in specific circumstances.

The working group will continue to monitor the development of accounting protocols for entity or project level greenhouse gas emissions. However, this level of reporting is not the group's focus. The group believes that registries and "bottom-up" entity or project accounting should be developed in the context of regulatory and market-based mechanisms. Furthermore, state-wide "bottom-up" accounting is not possible with voluntary reporting because the sum of voluntary reports by entities will not add to total state emissions.

Research. Climate change impacts will have important implications for a number of natural and socioeconomic systems in Washington, Oregon and California. Natural climatic events such as floods, mud slides, coastal erosion, droughts, and forest fires may be exacerbated by climate change and could significantly affect the state economies and quality of life. Potential changes in precipitation timing, intensity and distribution, and changes in temperature could reduce water availability. Such changes would impact the natural environment, power generation, agriculture, forestry, and other sectors. Human health is also likely to be affected by climate variability and changes in climate.

A range of research efforts have begun through California's Public Interest Energy Research's program in collaborations with other states, the U.S. Department of Energy, the University of Washington's Joint Institute for the Study of the Atmosphere and the Ocean, Battelle Pacific Northwest Laboratory, UC Berkeley, Stanford University, Oregon State University, and other national labs and universities. These efforts include improved climate change monitoring methodologies, analysis and modeling, estimating greenhouse gas emissions, assessing impacts of climate change on water and ecological resources, sequestration of carbon in the western U.S. region's terrestrial ecosystems and geological formations, and the economics of climate change mitigation and adaptation.

Options for Continuing Activity by the Working Group

The working group addressed specific inventory and accounting issues and identified scientific research needs that can help address state and regional policy development.

The three states agreed on the inventory and accounting topics noted in “accomplishments” below, but some options remain unfulfilled:

- a) The states have refined their accounting of emission reductions through materials use and recycling, considering the difference between accounting for in-state consumption and production, but it is an evolving field. There is more work to be done in this area. The greenhouse gas intensity of imported materials is an important consideration. For example, the Northwest has lost a large portion of its aluminum manufacturing industry, but it does not use less aluminum. As the industry has gone elsewhere, so have the emissions.
- b) The states will continue to follow research on the contribution to global warming from regional emissions of soot and from tropospheric ozone. The potential to mitigate global warming through reductions in the amounts of anthropogenic soot and ozone should also be evaluated. In either case, the states do not propose to add them to their inventories in the short term.

Regarding climate change science, there is a continuing interest in involving research universities and national labs from the three states. State governments have significantly varying resources allocated to scientific research and rely on federally funded efforts to address climate change impacts in the western region. Using revenue from a public goods surcharge on electricity sales, the California Energy Commission’s Public Interest Research Program has formed a collaboration with several universities to share research efforts on new inventory tools and emissions measurement methods. The Commission will continue to identify opportunities to share data and analysis and to seek additional collaborative research efforts with organizations in the three states.

The three states express a common interest to heighten awareness of research needs in the western region, such as:

- a) Evaluating hydrological impacts of global climate change and the related influences on the physical and biological environment.
- b) Understanding the socio-economic impacts of climate change on infrastructure, transportation, land use planning and how people interact with the environment.
- c) Seeking ways to inform government decision-makers, industry leaders and scientific researchers about the potential degradation anticipated from climate change and explore adaptation and mitigation measures.

Pros and Cons

The advantage of coordinating our inventories and estimating techniques is that we can have a uniform assessment that is applicable to the West Coast. We can compare the

forecasted effects of different measures or policies in the three states and evaluate them in a consistent manner. There are no negative impacts of such coordination. The only reservation might be the limits on resources to develop comprehensive practices.

Regional Approach

We have identified some instances in which states have particular needs. The goal of the working group is not absolute conformity; it is consistency where possible and identification of distinctions where necessary.

Political Considerations

Regional coordination on accounting issues is not an inherently political activity, so the working group does not anticipate controversy. The Regional Carbon Sequestration Partnership is a stakeholder for all three states. California has identified the California Climate Action Registry as a stakeholder for its accounting measures. The Climate Trust and the Governor's Advisory Group on Global Warming are stakeholders in Oregon. In Washington, the Puget Sound Clean Air Agency will also provide stakeholder input on Washington's state inventory.

Fiscal or Legislative Implications

There are no fiscal or legislative impacts unless there is need to find funds to conduct a tri-state global warming conference.

Accomplishments

The working group agreed upon standard accounting practices for its state inventories. The three states agreed on the following inventory and accounting topics:

- Each state will use data from the US DOE Energy Information Administration ("EIA") to calculate emissions from fossil fuels. International residual bunker fuels (fuels used by ships) will not be included in state inventories because the purchase of fuel is not related to state economic activities. Ships may purchase these fuels in any international port, depending on price. On the other hand, the states will account for international aviation and diesel fuels because the purchase of these fuels in the states is related to state economic activities, even if the fuels may be used outside state boundaries.
- Each state will track emissions through different but coordinated techniques. Oregon and Washington plan to compute utility average annual pounds of CO₂/kWh based on Washington's generation tracking system for the Northwest. California is developing methods to use its fuel mix labels to track CO₂ emissions. These systems are compatible and give comparable results for policy purposes.
- Each state will use the similar inventory and forecasting tools, starting with the US Environmental Protection Agency's "State Greenhouse Gas Inventory Tool and Guidance," the Emissions Inventory Improvement Project's "Volume VIII: Estimating Greenhouse Gas Emissions," and the State and Territorial Air Pollution Program Administrators/Association of Local Air

Pollution Control Officials' "Clean Air and Climate Protection Software."
States may vary the methodology based on the availability and quality of data.

- Each state will defer to coordination with the Regional Carbon Sequestration Partnership to develop the methodologies to account for sequestration of carbon in biomass.
- Additional work is required to measure and account for transportation fuels, especially in life-cycle accounting. Additional research and/or development of methodology will continue to be explored.

Recommended Actions

- The working group recommends that the Executive Committee organize a West Coast Governors' conference in 2005 to inform policy-makers and the public of climate change research concerning the West Coast states. It would address scientific knowledge and social and economic impacts and how the citizens, institutions, governments, and businesses in three states could respond to global climate change. The conference would also explore recommendations for continued regional cooperation in addressing global warming. Smaller scale conferences have been held in California, Oregon and Washington, but there has not been a full West Coast conference.
- The states should further refine their accounting of emission reductions through materials use and recycling, considering the difference between accounting for in-state consumption and production. The states should develop a model of greenhouse gas intensity of imported materials.
- The states should update their greenhouse gas inventories every three years, or as necessary to track progress toward goals that may be adopted.

Summary of Comments on April Draft Report

When the Working Group 5 Report: "Inventories/Protocols/Scientific Research" circulated in April 2004, the Working Group received comments from several stakeholders seeking clarifications and embellishments of existing initiatives or proposing additional, new initiatives. Where there were requests for clarifications, this version of the report has responded to them.

Several stakeholders felt the issue paper should recommend recording of greenhouse gas emissions at the entity or project level and integrate this approach with statewide inventories of emissions. In this regard, stakeholders suggested the West Coast States should learn from and coordinate with other states, regional partnerships, and national and international efforts to develop harmonized standards. Along the same lines, some recommended that the region establish a regional voluntary registry to record entity and project level greenhouse gas emissions. There was an assumption that the states could use data from such registries to build a bottom-up inventory.

As noted above, the work group is monitoring the development of accounting protocols for entity or project level greenhouse gas emissions as they might affect state-level inventories. However, the work group believes that “bottom-up” entity or project accounting should be developed in the context of regulatory and market-based mechanisms. State-wide “bottom-up accounting with voluntary reporting will not add to total state emissions.

Stakeholders commented on the analytical methods and scientific research topics, including several recommendations relating to the work of Regional Carbon Sequestration Partnership. The states are using the Partnership to address sequestration accounting issues. Other recommendations included:

- Expanding use of life cycle analysis techniques to provide a more comprehensive estimate of emissions from transportation fuels, with which the working group agrees; and,
- Engaging universities, research organizations and corporations to conduct shared research on renewable energy resources and technology design, which is addressed by Working Group 3.

Some stakeholders urged the working group to propose additional actions to stimulate greenhouse gas emission reductions. Several recommendations related to entity and project accounting and creation of voluntary registries, while others suggested regulatory measures to reduce greenhouse gas emissions. There were also recommendations to expand outreach education and provide research tools to help industry understand climate impacts and solutions. The working group has brought these recommendations to the attention of the regional Executive Committee for its determination on whether to adopt new areas.